

## WHAT IS CLAIMED IS:

1. An isolated and purified nucleic acid molecule that encodes protease C-E, and functional derivatives thereof.
- 5 2. The isolated and purified nucleic acid molecule of claim 1, having a nucleotide sequence selected from a group consisting of: (SEQ.ID.NO.:1), (SEQ.ID.NO.:2) and functional derivatives thereof.
- 10 3. The isolated and purified nucleic acid molecule of claim 1, wherein said molecule is selected from a group consisting of DNA, genomic DNA, cDNA, RNA and mRNA.
- 15 4. An expression vector for expression of protease C-E protein in a recombinant host, wherein said vector contains a nucleic acid molecule having a nucleotide sequence encoding protease C-E protein, and functional derivatives thereof.
- 20 5. The expression vector of claim 4, wherein the expression vector contains a nucleotide sequence encoding protease C-E protein selected from a group consisting of (SEQ.ID.NO.:1), (SEQ.ID.NO.:2) and functional derivatives thereof.
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6. The expression vector of claim 4, wherein the nucleic acid molecule encoding protease C-E protein is genomic DNA.
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- 25 7. A recombinant host cell containing the expression vector of claim 4.

8. The recombinant host cell of claim 7, wherein said expression vector contains a nucleotide sequence selected from a group consisting of (SEQ.ID.NO.:1), (SEQ.ID.NO.:2) and functional derivatives thereof.

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5 9. The recombinant host cell of claim 7, wherein said nucleotide sequence is genomic DNA.

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10 10. A protein in substantially pure form that functions as protease C-E protein.

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11. The protein according to claim 10, having an amino acid sequence selected from a group consisting of (SEQ.ID.NO.:7), (SEQ.ID.NO.:8) and functional derivatives thereof.

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15 12. A monospecific antibody immunologically reactive with protease C-E protein.

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13. The antibody of Claim 12, wherein the antibody blocks protease activity of the protease C-E protein.

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20 14. A process for expression of protease C-E protein in a recombinant host cell, comprising:

- (a) transferring the expression vector of Claim 4 into suitable host cells; and
- (b) culturing the host cells of step (a) under conditions which allow expression of the protease C-E protein from the expression vector.
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25 15. A method of identifying compounds that modulate protease C-E protein activity, comprising:

- (a) combining a modulator of protease C-E protein activity, protease C-E protein, and a labeled substrate; and
- (b) measuring a change in the labeled substrate.

5           16. The method of claim 15 wherein the labeled substrate is selected from the group consisting of flourogenic, colormetric, radiometric, and fluorescent resonance energy transfer (FRET).

10           17. A compound active in the method of Claim 15, wherein said compound is a modulator of protease C-E serine protease activity.

18. The compound of Claim 16, wherein said compound is an agonist or antagonist of protease C-E serine protease activity.

15           19. The compound of Claim 16, wherein said compound is a modulator of expression of protease C-E serine protein.

20           20. A method of treating a patient in need of such treatment for a condition that is mediated by protease C-E, comprising administration of the compound of Claim 16.

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21. A kit comprising a nucleic acid sequence selected from a group consisting of SEQ.ID.NO.:1 and SEQ.ID.NO.:2, and fragments thereof.

25           22. A kit comprising a serine protease C-E protein having an amino acid sequence selected from the group consisting of SEQ.ID.NO.:7 and SEQ.ID.NO.:8, and fragments or derivatives thereof.

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23. A pharmaceutical composition comprising the protein of claim 10.

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27. A method of treating an imbalance of desquamation comprising topical application of the composition of claim 24.